

WHAT IS CLAIMED AS NEW IS AS FOLLOWS:

25/27
1. An insulation plug for the die face of an extrusion die in an underwater pelletizer in which the die face is provided with a recess, said insulation plug including a rigid plate inserted into said recess in close fitting relationship thereto, said plate having at least one raised portion to form an air gap with said recess to reduce transfer of heat from the extrusion die and molten polymer being extruded therethrough into circulating water in said underwater pelletizer.

2. The insulation plug as defined in claim 1, wherein said plate is a solid one piece construction.

3. The insulation plug as defined in claim 1, wherein said plate is a two piece construction defining a hollow interior between said two pieces.

4. The insulation plug as defined in claim 3, wherein said hollow is filled with insulation material.

5. The insulation plug as defined in claim 1, wherein said rigid plate is made of a low heat conductive material.

6. The insulation plug as defined in claim 1, wherein said plate is circular with a central aperture, and including a retaining bolt extending through the aperture and into the extrusion die to secure said plate in said recess.

7. The insulation plug as defined in claim 6, wherein said aperture includes an inclined peripheral wall for engagement by an inclined peripheral wall on a head of said retaining bolt.

8. In combination, an extrusion die for an underwater pelletizer, said extrusion die including a die face having a recess therein, a rigid insulating plate fitting closely in said recess and substantially completely filling the recess to prevent water circulating in the pelletizer from coming into heat exchange relation to the surface of the die plate recess, said plate having at least one raised portion to define at least one air gap with said recess.

9. The combination as defined in claim 8, wherein said insulating plate is made of a low heat conductive material which can withstand degradation by pellets and water.

10. The combination as defined in claim 8, wherein said recess has a bottom surface and a peripheral surface and said plate has an inner surface facing said recess bottom surface and a generally cylindrical side surface facing said recess peripheral surface and said raised portion being on said plate inner surface to engage said recess bottom surface.

11. The combination as defined in claim 10, wherein said generally cylindrical plate side surface also includes a raised portion in the form of a flange which engages said recess peripheral surface to define a second air gap in said recess.

12. The combination as defined in claim 10 wherein said die face recess includes a central counterbore and said combination further includes a rigid spacer in said counterbore between said recessed bottom surface and said plate inner surface to maintain spacing for said at least one air gap.

13. An underwater pelletizer which comprises an extrusion die in the form of a die plate having a die face provided with a central circular recess and orifices around its periphery through which molten polymer is extruded from said die face, a cutter hub supporting a plurality of cutter knives which cooperate with said die face to cut polymer strands extruded through said orifices into pellets, and a water box surrounding said cutter hub, cutter knives and die face to cool said extruded polymer and transport said polymer pellets away from said die face, and a rigid circular insulation plug inserted into said die face central recess in close fitting relationship thereto to reduce transfer of heat from the extrusion die and molten polymer being extruded therethrough into said circulating water in said water box.

14. The underwater pelletizer as defined in claim 13, wherein said insulation plug is a plate having parallel opposed surfaces and a peripheral side wall surface, a raised flange formed on said peripheral side wall surface adjacent the face of the rigid plate that faces toward the cutter hub and knives to form a peripheral recess on said peripheral side wall surface adjacent the

face of the solid plate facing the bottom of the recess in the die plate, said flange engaging an inner peripheral surface of the recess in the die plate thereby entrapping air between the recess in the solid plate and the insulation plug to enhance the insulating characteristics of the insulation plug.

15. The underwater pelletizer as defined in claim 14, wherein said plate surface facing the bottom of the die plate recess includes at least one raised portion thereon to form an air gap between said bottom facing plate surface and said recess bottom to entrap air therebetween and enhance the insulating characteristics of the insulation plug.

16. The underwater pelletizer as defined in claim 13, wherein said rigid circular insulation plug is a solid one piece construction made of a material having low heat conductivity.

17. The underwater pelletizer as defined in claim 13, wherein said rigid circular insulation plug is a two piece construction made of a low heat conductivity material and defining a hollow interior.

18. The underwater pelletizer as defined in claim 17, wherein said hollow interior is filled with an insulation material.

19. The underwater pelletizer as defined in claim 13, wherein said insulation plug is a plate having substantially parallel opposed surfaces and a peripheral sidewall surface and has a raised flange on one said parallel opposed surface adjacent an

outer periphery thereof to form an air gap between said one opposed plate surface and a bottom surface of said central recess.

20. The underwater pelletizer as defined in claim 19, wherein said central recess includes a central counterbore, and said underwater pelletizer further includes an annular spacer positioned in said counterbore to maintain said air gap.